Jurnal Pendidikan Manajemen Perkantoran (JP Manper)

Journal homepage: http://ejournal.upi.edu/index.php/jpmanper

Archival Training and MPLB Teachers' Subject-Matter Mastery in the Merdeka Curriculum

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ABSTRACT

Implementing the Merdeka Curriculum in vocational education requires teachers to master subject matter aligned with current workplace practices. In the Office Management and Business Services (MPLB) programme, archival competence is important for supporting modern office administration and digital records management learning. This study examined the contribution of archival training to MPLB teachers' archival subject-matter mastery in West Java. Using a quantitative one-group pretest-posttest pre-experimental design, the study analysed 91 teachers with complete pretest and posttest data from 101 training participants. The data were analysed using descriptive statistics, the Wilcoxon signed-rank test, the paired-samples t-test, and normalized gain. The findings showed an increase in the mean score from 65.03 to 81.16, with an overall normalized gain of 0.37. These results indicate that archival training strengthens MPLB teachers' archival subject-matter mastery and supports more contextual and work-relevant learning.

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ARTICLE INFO

Article History:
Submitted/Received 23 April 2026
First Revised 30 April 2026
Accepted 1 July 2026
First Available online 25 July 2026
Publication Date 30 July 2026

Keyword:
Archival subject-matter mastery;
Archival training;
Merdeka Curriculum;
MPLB teachers.

1. INTRODUCTION

The implementation of the Merdeka Curriculum in vocational education requires teachers to possess strong professional capacity in order to design and deliver learning that is contextual, adaptive, flexible, and aligned with the prescribed learning outcomes. In this context, teachers do not merely serve as transmitters of content, but also as designers of learning experiences who are able to connect disciplinary subject matter with the demands and needs of the workplace. The Merdeka Curriculum's emphasis on differentiation, authentic assessment, and competence development positions subject-matter mastery as an important prerequisite for effective learning. Therefore, improving teacher competence constitutes a strategic agenda for strengthening the quality of vocational education, particularly in areas of expertise that are directly related to modern administrative governance (Mulyasa, 2023; Anggraini et al., 2022; Nasution et al., 2023; Badan Standar, Kurikulum, dan Asesmen Pendidikan, 2022).

In the Office Management and Business Services (MPLB) Programme, one of the core areas of subject matter that teachers need to master is archival management. Archival management can no longer be understood narrowly as the storage of documents, but rather as an information management system that encompasses the creation, use, maintenance, disposition, and transformation of records within an increasingly digitalised workplace. Teachers' mastery of archival subject matter is important because learning in this programme is expected to represent current, efficient, accountable, and technology-based office administration practices. Accordingly, the quality of learning is strongly influenced by the extent to which teachers are able to translate archival concepts and procedures into learning experiences that are relevant to the prescribed learning outcomes and to the needs of the business and industrial sectors (Badan Standar, Kurikulum, dan Asesmen Pendidikan, 2022; Suryadhiningrat et al., 2023).

In line with this, strengthening vocational teachers' competence in the digital era cannot be understood merely as the mastery of general pedagogy, but also includes the ability to use technology, develop digital content, select appropriate media, and integrate digital tools into competence-based learning. Recent studies show that digital competence is a real need for vocational education teachers and needs to be developed through training, technical support, and continuous professional learning (Diachuk, 2024; Setuju et al., 2025). In this context, vocational teachers are not only required to master teaching materials, but also to act as facilitators who bridge technological developments with learning needs and workplace practices. Therefore, substantive training in fields relevant to the workplace, including archival management, has become increasingly important to ensure that teachers are able to deliver learning that is adaptive, applicable, and aligned with developments in modern office administration (Diachuk, 2024; Setuju et al., 2025).

On the other hand, the growing use of digital records in educational institutions indicates that archival transformation has become part of broader efforts to improve administrative efficiency, accelerate access to information, strengthen transparency, and enhance data security. Studies on the use of digital records in Indonesian educational institutions show that records digitalisation can support more effective management of academic and administrative data. However, its implementation continues to face challenges, including limited training, unequal technological infrastructure, and data security issues (Nasution & Pasaribu, 2024). These findings indicate that the need to strengthen teachers' archival subject-matter mastery is relevant not only to classroom learning, but also to preparing teachers to understand records management practices that are aligned with the ongoing

DOI: https://doi.org/10.17509/jpm.v11i2.99239
p- ISSN 2686-5491 e- ISSN 2656-4734

transformation of educational administration. Thus, archival training for vocational school teachers in the MPLB Programme is relevant not only from a curricular perspective, but also in terms of institutional readiness to address increasingly digital records governance (Nasution & Pasaribu, 2024).

Nevertheless, previous studies have shown that the implementation of the Merdeka Curriculum continues to face various challenges, particularly in relation to teacher readiness, lesson planning, and the implementation of assessment (Aulia et al., 2023; Jannah et al., 2022). In the fields of office administration and archival management, the existing literature has tended to focus on the development of learning media, electronic records applications, digital systems, or the improvement of students' learning outcomes (Lestari et al., 2022; Jannah et al., 2024; Mufarridah & Susantiningrum, 2024; Wadana et al., 2023; Saina et al., 2025). Meanwhile, studies that specifically examine the effectiveness of archival training in strengthening archival subject-matter mastery among vocational school teachers, particularly teachers in the MPLB Programme, remain relatively limited. Yet training is an important instrument in the development of teachers' professional competence, especially in fields that continue to evolve alongside the digitalisation of office administration. A number of training and mentoring initiatives have reported positive contributions to improving records management capacity (Citraningsih & Fauzi, 2023; Kristiningsih et al., 2022; Mutmainnah et al., 2024; Pramana et al., 2024; Sutisna et al., 2020). However, quantitative evidence demonstrating changes in teachers' archival subject-matter mastery after participating in training remains limited. This condition indicates an empirical gap that needs to be addressed through more focused research.

This study aims to identify the extent to which archival training contributes to strengthening MPLB teachers' readiness to support office management learning through improved archival subject-matter mastery. The study focuses on comparing pretest and posttest results in order to identify differences in participants' competence before and after training, while also assessing the level of learning improvement achieved. Academically, this study is expected to contribute to strengthening the literature on the development of vocational teachers' competence in the field of archival management. Practically, the findings are expected to provide a basis for improving training design, strengthening teacher professional development programmes, and enhancing the quality of MPLB learning so that it becomes increasingly relevant to the demands of modern office administration. Thus, this study not only identifies changes in archival subject-matter mastery after training, but also explains its contribution to strengthening office management learning, particularly in relation to the development of MPLB teachers' substantive competence.

2. LITERATURE REVIEW

Training is a systematic process designed to improve participants' mastery of knowledge, skills, and attitudes in accordance with the required competences. In the context of vocational education, teacher training has a strategic function because it serves as a means of strengthening professional competence, particularly in relation to the subject matter being taught. In this study, archival training is understood as a structured intervention aimed at strengthening archival subject-matter mastery among vocational school teachers in the MPLB Programme. Such strengthening is important because the quality of vocational learning is largely determined by the extent to which teachers master the subject matter in a sufficient, up-to-date, and practice-relevant manner. Accordingly, archival training is positioned not merely as an activity for broadening knowledge, but as an effort to develop teachers'

DOI: https://doi.org/10.17509/jpm.v11i2.99239
p- ISSN 2686-5491 e- ISSN 2656-4734

substantive competence in the field of archival management (Arsip Nasional Republik Indonesia, 2022; Mulyasa, 2023).

The theoretical basis that can explain the relationship between training and improved subject-matter mastery is adult learning theory, or andragogy. Knowles, Holton, and Swanson (2015) explain that adults learn more effectively when their learning experiences are relevant to real needs, directly related to their social and occupational roles, allow room for participants' prior experience, and are oriented towards problem solving. In the context of vocational teacher training, this principle is important because training participants are not novice learners, but teachers who already have teaching experience and professional experience within educational settings. Therefore, archival training needs to be understood as an adult learning process that connects archival subject matter with MPLB teachers' professional needs in designing learning that is aligned with office administration practices.

In addition, the effectiveness of training in this study can also be explained through Kirkpatrick's training evaluation model, particularly Level 2, or learning. Kirkpatrick and Kirkpatrick (2006) define learning as changes in participants' knowledge, skills, attitudes, or beliefs after participating in training. Since this study measures changes in pretest and posttest scores, the evaluation focuses on the learning level, namely the extent to which participants demonstrate improved archival subject-matter mastery after completing the training. Accordingly, the use of pretests, posttests, difference testing, and normalized gain is consistent with a training evaluation framework that assesses changes in participants' learning outcomes as the direct result of a training intervention.

In the MPLB Programme, archival management is one of the core areas of subject matter related to the management of information and documents in office administration processes. Archival management encompasses a series of activities, including the creation, use, maintenance, conversion, migration, disposition, and management of records within digital systems. This subject matter is important because vocational learning under the Merdeka Curriculum requires a strong connection between teaching materials, learning outcomes, and workplace needs. Therefore, teachers need to have sound mastery of archival concepts, procedures, and evolving archival practices in order to deliver the subject matter accurately and relevantly. Strong subject-matter mastery will support the implementation of learning that is more contextual, applicable, and aligned with the characteristics of subjects in the field of office administration (Badan Standar, Kurikulum, dan Asesmen Pendidikan, 2022; Suryadhiningrat et al., 2023).

Conceptually, archival subject-matter mastery in this study refers to teachers' level of understanding of the core materials of archival training that underpin competence in this field. Subject-matter mastery does not only reflect factual knowledge of terms and procedures, but also conceptual understanding of records management workflows, the function of each stage of archival management, and the relevance of digital transformation to modern document governance. In this study, archival subject matter includes an introduction to archival management, records creation, records use and maintenance, records conversion and migration, records disposition, and digital transformation in archival management. Therefore, improved archival subject-matter mastery is understood as an increase in teachers' mastery of these materials after participating in the training.

Current developments in office administration indicate a shift from conventional records systems towards increasingly technology-based systems. This shift requires teachers to update their subject-matter mastery so that it remains aligned with developments in actual workplace practices. A number of studies have shown that the use of digital records media and systems can support the effectiveness of document management and learning processes

DOI: https://doi.org/10.17509/jpm.v11i2.99239
p- ISSN 2686-5491 e- ISSN 2656-4734

in the field of office administration (Citraningsih & Fauzi, 2023; Jannah et al., 2024; Mufarridah & Susantiningrum, 2024; Wadana et al., 2023). These findings indicate that archival management is no longer understood merely as a basic administrative skill, but as a competence connected to information governance, document organisation, work efficiency, and the use of technology. Therefore, archival training becomes relevant as a means of strengthening teachers' subject-matter mastery so that it remains aligned with developments in the field of office administration and the demands of the Merdeka Curriculum.

The international literature on vocational teachers' professional development also emphasises that vocational teachers' professional learning needs to be connected to developments in the workplace, field-specific competence requirements, and continuously evolving professional practices. Zhou, Tigelaar, and Admiraal (2022) show that vocational teachers' professional learning can take place in various forms, both formal and informal, and can lead to changes in cognitive aspects, behaviour, teaching practices, and institutional benefits. Sandal (2023) also emphasises that vocational teachers' professional development needs to be grounded in the characteristics of vocational learning and the specific needs of the field of expertise being taught. In line with this, Andersson and Köpsén (2018) show that vocational teachers need to maintain a connection with their original occupational fields and industrial practices in order to keep their professional competence up to date. In the context of this study, these findings strengthen the argument that archival training for MPLB teachers functions not only as an activity for improving knowledge, but also as part of vocational teachers' professional development to maintain the relevance of teaching content to modern office administration practices.

Training effectiveness in this study is understood as the extent to which training succeeds in improving participants' archival subject-matter mastery. Operationally, this effectiveness is indicated by differences between teachers' initial and final competence after participating in the training. Since this study employs a one-group pre-experimental design with pretest and posttest measurements, improvement in archival subject-matter mastery is identified through changes in scores before and after the training intervention. The greater the positive difference obtained, the stronger the indication that the training has an effect on strengthening teachers' archival subject-matter mastery. Thus, the use of pretest and posttest measurements is relevant for assessing changes in subject-matter mastery as a direct outcome of the training undertaken by participants.

Based on the preceding discussion, the theoretical framework of this study positions archival training as the independent variable and improvement in teachers' archival subject-matter mastery as the dependent variable. The relationship between the two is based on the assumption that training which is structured, relevant, needs-based, and aligned with the principles of adult learning will strengthen the archival subject-matter mastery of vocational school teachers in the MPLB Programme. Within the training evaluation framework, changes in pretest and posttest scores are understood as indicators of learning, reflecting changes in knowledge mastery after training. This improvement in subject-matter mastery subsequently provides an important basis for strengthening the quality of vocational learning and supporting the learning outcomes of the Merdeka Curriculum. On the basis of this framework, the study is directed towards examining whether the archival training provided can significantly improve teachers' archival subject-matter mastery based on pretest and posttest results.

DOI: https://doi.org/10.17509/jpm.v11i2.99239
p- ISSN 2686-5491 e- ISSN 2656-4734

3. METHODOLOGY

3.1. Research Design

This study employed a quantitative approach with a pre-experimental one-group pretest-posttest design. This design was selected because it is aligned with the aim of the study, namely to examine the contribution of archival training to strengthening the substantive readiness of vocational school teachers in the MPLB Programme to support office management learning through improved archival subject-matter mastery. Through this design, participants' level of archival subject-matter mastery was measured before the training intervention was delivered and measured again after the entire training programme had been completed. The difference between pretest and posttest scores was used as the basis for assessing changes in participants' archival subject-matter mastery after taking part in the training. A pre-experimental one-group pretest-posttest design is commonly used to examine changes in outcomes within the same group before and after an intervention is delivered (Arikunto, 2006).

Operationally, the research design is expressed as O_1 X O_2, where O_1 represents the pretest score, X represents the archival training intervention, and O_2 represents the posttest score. This design is consistent with the direction of the study because it enables the researcher to examine changes in participants' archival subject-matter mastery as a basis for interpreting the contribution of training to strengthening teachers' readiness in MPLB learning (Arikunto, 2006).

3.2. Population and Sample

The population of this study consisted of state vocational school teachers in the MPLB Programme in West Java Province who participated in the Technical Archival Training for the Community. The sample comprised 101 teachers who were official participants in the third and fourth cohorts of archival training in 2025, organised by the Human Resources Training Centre of the National Archives of the Republic of Indonesia (ANRI). The sampling technique used was total sampling, as all participants who met the research criteria were included as respondents.

Of the 101 participants, only 91 were included in the analysis because 10 participants did not take the pretest. Therefore, the analysis was conducted only on participants with complete data, namely both pretest and posttest scores. This decision was made to ensure that changes in archival subject-matter mastery were measured accurately among the same respondents before and after the training intervention.

3.3. Research Instrument

The research instrument consisted of an objective test administered at the pretest and posttest stages to measure teachers' archival subject-matter mastery. The development of the test items was based on two main foundations, namely the guidelines for learning and assessment at the primary and secondary education levels, and the Curriculum for Technical Archival Training for the Community, as stipulated in the Decree of the Head of ANRI Number 444 of 2024 (Pusat Asesmen dan Pembelajaran, 2021; Arsip Nasional Republik Indonesia, 2024).

The curriculum states that training for vocational school teachers in the MPLB Programme aims to ensure that participants acquire basic knowledge and skills in records management.

DOI: https://doi.org/10.17509/jpm.v11i2.99239
p- ISSN 2686-5491 e- ISSN 2656-4734

The target of this programme is the availability of vocational school teachers in the MPLB Programme who possess basic knowledge and skills in records management activities (Arsip Nasional Republik Indonesia, 2024). Based on the same document, the materials used as the basis for developing the instrument consisted of six training subjects: introduction to archival management, records creation, records use and maintenance, records conversion and migration, records disposition, and digital transformation in archival management (Arsip Nasional Republik Indonesia, 2024). These six materials also served as the operational indicators of the archival subject matter measured in this study.

The research instrument was developed by the Training Planning and Evaluation Team within PPSDM ANRI and had undergone expert validation. The reliability test of the instrument, using the Cronbach's alpha coefficient, produced a value of 0.698, indicating that the instrument had sufficient internal consistency for use in this study.

3.4. Research Procedure

The research procedure was carried out in four stages, the first of which was preparation. At this stage, coordination was undertaken with the relevant parties involved in the implementation of the training, the activity schedule was prepared, and the pretest and posttest instruments were developed. At this stage, the researcher also ensured that the subject matter measured in the instrument was aligned with the structure of the training curriculum established by ANRI (2024).

The second stage was the administration of the pretest. Before participating in the training, participants completed an initial test to measure their level of archival subject-matter mastery. The scores obtained at this stage were used to provide an overview of participants' initial competence in the archival materials to be studied during the training.

The third stage was the implementation of archival training. Based on the Curriculum for Technical Archival Training for the Community, training for vocational school teachers in the MPLB Programme was allocated 24 lesson hours and was delivered through both theoretical and practical learning (Arsip Nasional Republik Indonesia, 2024). The time structure consisted of 13 lesson hours of theory and 11 lesson hours of practice, with the following training subjects: introduction to archival management, 3 lesson hours; records creation, 3 lesson hours; records use and maintenance, 6 lesson hours; records conversion and migration, 4 lesson hours; records disposition, 5 lesson hours; and digital transformation in archival management, 3 lesson hours (Arsip Nasional Republik Indonesia, 2024). Substantively, this curriculum emphasises the ability to understand the legal basis, definitions, types, instruments, and media of records; records creation; active records filing, inactive records arrangement, and records storage; records media conversion procedures; records disposition procedures; and digital transformation in archival management (Arsip Nasional Republik Indonesia, 2024). The training was facilitated by trainers, archivists, and computer specialists within ANRI through interactive lectures, demonstrations, hands-on practice, discussions, and case studies.

The fourth stage was the administration of the posttest. After the entire training programme had been completed, participants took a final test covering materials equivalent to those in the pretest. The posttest scores were then used to identify changes in archival subject-matter mastery after participants had taken part in the training.

DOI: https://doi.org/10.17509/jpm.v11i2.99239
p- ISSN 2686-5491 e- ISSN 2656-4734

3.5. Data Analysis

The data were analysed using descriptive and inferential statistics. Descriptive statistics were used to present participants' mean scores, minimum scores, maximum scores, and changes in pretest and posttest scores. Inferential statistics were used to test the significance of score changes after the training intervention had been delivered.

Before hypothesis testing was conducted, the normality of the data was tested using the Shapiro–Wilk and Kolmogorov–Smirnov tests. These tests were conducted to determine the most appropriate inferential analysis technique. If the data were normally distributed, differences between pretest and posttest scores were analysed using a paired-samples t-test. If the data were not normally distributed, the analysis was conducted using the Wilcoxon signed-rank test. The significance level used was 0.05. The alternative hypothesis was accepted if the significance value was less than 0.05, indicating that archival training had an effect on improving teachers' archival subject-matter mastery.

To describe the level of improvement in participants' archival subject-matter mastery after training, this study also used the normalized gain score. This analysis was used to examine the magnitude of improvement in participants' archival subject-matter mastery from the initial condition to the final condition. The gain categories referred to Hake's criteria, namely high if the gain value reached 0.70 or above, medium if it was in the range of 0.30 to less than 0.70, and low if it was below 0.30 (Hake, 1999). Thus, normalized gain analysis complemented the significance test by providing an overview of the level of improvement in archival subject-matter mastery achieved by the training participants.

4. RESULTS AND DISCUSSION

4.1. Results of the Descriptive Analysis

This study aimed to identify the contribution of archival training to strengthening the substantive readiness of vocational school teachers in the MPLB Programme in West Java Province to support office management learning through improved archival subject-matter mastery. The analysis was conducted on 91 participants who had complete data at the pretest and posttest stages. The results of the descriptive analysis showed that the mean pretest score was 65.03, while the mean posttest score reached 81.16. Thus, there was a mean increase of 16.13 points after participants had taken part in the archival training. This improvement indicates that the training not only contributed to higher test results among participants, but also strengthened teachers' substantive readiness to teach archival materials more accurately, contextually, and in accordance with modern office administration practices.

The increase in scores indicates that, in general, the training had a positive impact on participants' archival subject-matter mastery. When linked to the objectives of the Technical Archival Training for the Community, these results indicate that the training contributed to improving teachers' basic knowledge and skills in records management, as formulated in the training curriculum established by ANRI (Arsip Nasional Republik Indonesia, 2024). This means that, after participating in the training, teachers had a better understanding of the core archival materials, which included introduction to archival management, records creation, records use and maintenance, records conversion and migration, records disposition, and digital transformation in archival management (Arsip Nasional Republik Indonesia, 2024).

Descriptively, this finding is important because it shows that the training not only increased test scores numerically, but also strengthened subject-matter mastery in a field that

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p- ISSN 2686-5491 e- ISSN 2656-4734

constitutes the core substance of the MPLB Programme. This finding is consistent with the view that subject-matter mastery is an important prerequisite for the implementation of vocational learning that is contextual and relevant to the learning outcomes of the Merdeka Curriculum (Mulyasa, 2023; Badan Standar, Kurikulum, dan Asesmen Pendidikan, 2022). In the context of modern office administration, strengthening archival subject-matter mastery has become increasingly important because learning is expected to represent current, efficient, accountable, and technology-based document management practices (Suryadhiningrat et al., 2023).

4.2. Results of the Normality Test and Difference Test

Before hypothesis testing was conducted, the normality of the data was first tested to determine the most appropriate inferential analysis technique. The Shapiro–Wilk test produced a statistic of 0.812 with a significance value of 0.0000000021, while the Kolmogorov–Smirnov test produced a statistic of 0.151 with a significance value of 0.028. Since both significance values were less than 0.05, the data were declared not to be normally distributed. This finding indicates that non-parametric analysis was more appropriate as the main basis for testing differences between pretest and posttest scores.

Based on these results, the Wilcoxon signed-rank test was used as the main test. The Wilcoxon test produced a statistic of 88.0 with a significance value of 3.25×10^{-11}. This value was far below 0.05, so it can be concluded that there was a significant difference between the pretest and posttest scores. This finding confirms that archival training was associated with a significant improvement in teachers' archival subject-matter mastery after they had completed the entire training programme.

As a complementary analysis, a paired-samples t-test was also conducted to examine the consistency of the direction of the findings. The test produced a t-value of 9.099 with a significance value of 2.14×10^{-14}. This result also indicates a significant difference between the pretest and posttest scores. The consistency of the results between the Wilcoxon test and the t-test strengthens the finding that the increase in scores was not incidental, but reflected the effect of training on participants' archival subject-matter mastery.

Table 1. Results of the Difference Test between Pretest and Posttest Scores

Statistic	Value
Mean pretest score	65.03
Mean posttest score	81.16
Mean difference	16.13
t-value	9.099
Significance value of the t-test	2.14×10^{-14}
Wilcoxon statistic	88.0
Wilcoxon significance value	3.25×10^{-11}

These statistical findings directly support the aim of the study, namely to identify differences in participants' archival subject-matter mastery before and after training. In the context of this study, these differences are not interpreted as a general change in teaching ability, but specifically as an improvement in mastery of the archival materials that formed the focus of the intervention. Thus, the results of this testing are consistent with the theoretical framework of the study, which positions archival training as the independent

DOI: https://doi.org/10.17509/jpm.v11i2.99239
p- ISSN 2686-5491 e- ISSN 2656-4734

variable and improvement in teachers' archival subject-matter mastery as the dependent variable.

4.3. Level of Effectiveness Based on Normalized Gain

To complement the results of the significance test, this study also calculated normalized gain to examine the level of training effectiveness in improving participants' archival subject-matter mastery. The calculation results showed that the overall mean normalized gain reached 0.37. Based on Hake's criteria, this value falls within the medium category (Hake, 1999). This finding indicates that the archival training provided was moderately effective in improving teachers' archival subject-matter mastery, although its effectiveness had not yet reached the high category.

When examined in greater detail based on gain categories, 34 participants, or 37.36%, were in the low category, with a mean gain of -0.12. Furthermore, 33 participants, or 36.26%, were in the medium category, with a mean gain of 0.52, while 24 participants, or 26.37%, were in the high category, with a mean gain of 0.84. This distribution shows that although the overall mean gain was in the medium category, improvement in archival subject-matter mastery was not evenly achieved across all participants.

Table 2. Results of Normalized Gain

Category	Number of Participants	Percentage	Mean Gain
Low	34	37.36%	-0.12
Medium	33	36.26%	0.52
High	24	26.37%	0.84
Overall	91	100%	0.37

These findings indicate a fairly marked variation in learning outcomes among participants. The proportion of participants in the low category reached 37.36%, and therefore cannot be regarded as a minor segment within the distribution of training outcomes. Meanwhile, participants in the medium and high categories together accounted for 62.63% of all participants analysed. Thus, archival training can be considered to have made a positive contribution to improving archival subject-matter mastery, although the equitable distribution of training outcomes still requires attention. In this context, normalized gain analysis functions not only as an indicator of training effectiveness, but also as a basis for evaluating variations in participants' learning achievement.

4.4. Discussion

The results of the study show that archival training was associated with a significant improvement in the archival subject-matter mastery of vocational school teachers in the MPLB Programme. The increase in mean scores from 65.03 to 81.16, the significant Wilcoxon test result, the consistent t-test result, and the overall normalized gain in the medium category indicate that the training successfully strengthened participants' subject-matter mastery. Thus, the findings of this study support the theoretical assumption that structured, relevant, and needs-based training can strengthen teachers' mastery of the subject matter in the field they teach (Arsip Nasional Republik Indonesia, 2024; Mulyasa, 2023).

This finding is also consistent with the argument presented in the introduction that the implementation of the Merdeka Curriculum requires teachers to possess strong subject-matter mastery so that vocational learning is genuinely contextual and aligned with

DOI: https://doi.org/10.17509/jpm.v11i2.99239
p- ISSN 2686-5491 e- ISSN 2656-4734

workplace needs (Mulyasa, 2023; Nasution et al., 2023; Badan Standar, Kurikulum, dan Asesmen Pendidikan, 2022). In the context of the MPLB Programme, archival management constitutes a core area of subject matter that cannot be separated from modern office administration practices. Therefore, improving teachers' archival subject-matter mastery through training is a strategic step in supporting the implementation of learning that is relevant to the learning outcomes of the Merdeka Curriculum and to the needs of the business and industrial sectors (Suryadhiningrat et al., 2023).

When linked to the theoretical framework of the study, this result reinforces the view that training functions as an instrument for developing teachers' substantive competence. The archival training used in this study was systematically designed through the Curriculum for Technical Archival Training for the Community, with the aim of providing basic knowledge and skills in records management to vocational school teachers in the MPLB Programme (Arsip Nasional Republik Indonesia, 2024). The structure of the materials, which covered both conceptual and practical aspects, enabled participants not only to understand basic terms and procedures, but also to gain a more comprehensive understanding of records management workflows, the use of archival instruments, records disposition procedures, and digital transformation in archival management. Therefore, the increase in posttest scores in this study can be understood as an indicator that the training successfully transferred the substantive content to participants.

From the perspective of office management education, improving teachers' archival subject-matter mastery has direct implications for the quality of MPLB learning. Teachers who master the concepts of records creation, records use and maintenance, records disposition, and digital transformation in archival management are better prepared to translate the materials into learning scenarios that closely reflect real workplace practices. Thus, the main contribution of this training does not stop at improving posttest scores, but lies in strengthening teachers' capacity to deliver office management learning that is more contextual, applicable, and relevant to workplace needs. This means that the training outcomes have the potential to support the selection of more up-to-date teaching materials, the use of more authentic case examples, and greater emphasis on digital records practices, which are increasingly important in modern office administration.

The findings of this study are also consistent with various previous studies showing that interventions through training, mentoring, and the strengthening of digital records systems make a positive contribution to capacity development in the fields of office administration and archival management. The studies by Citraningsih and Fauzi (2023), Kristiningsih et al. (2022), Mutmainnah et al. (2024), Pramana et al. (2024), and Sutisna et al. (2020) show that training and mentoring can improve records management capacity and digital literacy within educational settings. This study extends those findings by providing quantitative evidence that archival training is also effective in improving the archival subject-matter mastery of MPLB vocational school teachers.

In addition, the findings of this study can be read as a response to the research gap identified in the introduction. To date, a number of studies in the fields of office administration and archival management have focused more on the development of learning media, electronic records applications, or the use of digital systems to improve students' learning outcomes (Lestari et al., 2022; Jannah et al., 2024; Mufarridah & Susantiningrum, 2024; Wadana et al., 2023; Saina et al., 2025). This study shows that strengthening teachers through training is also an important aspect that requires attention, because teachers are the key actors who translate archival subject matter into the vocational learning process. Thus,

DOI: https://doi.org/10.17509/jpm.v11i2.99239
p- ISSN 2686-5491 e- ISSN 2656-4734

improving teachers' archival subject-matter mastery can be viewed as a foundation for developing learning that is more relevant, applicable, and aligned with curriculum demands.

On the other hand, the normalized gain value, which fell within the medium category, indicates that the effectiveness of the training still has room for further improvement. This finding suggests that the training was moving in the right direction, but had not yet been fully optimal and had not produced evenly distributed improvement across all participants. Differences in achievement among participants indicate that a single training design can generate different learning responses. This may have been influenced by the heterogeneity of participants' initial competence, variations in work experience, the intensity of engagement during training, and the limited learning time available. Since the training was delivered within an allocation of 24 lesson hours, applied materials, particularly those related to digital transformation in archival management, still require more intensive reinforcement through sustained practice or follow-up mentoring (Arsip Nasional Republik Indonesia, 2024).

Specifically, the negative mean gain in the low category (-0.12) needs to be understood as an indicator that some participants had not experienced optimal improvement in learning outcomes after participating in the training. This finding does not negate the general tendency that the training made a positive contribution to improving archival subject-matter mastery, but it does indicate variations in achievement that need to be considered in training evaluation. Since this study did not collect individual qualitative data on participants' learning experiences, explanations for the negative gain should be positioned cautiously as possibilities rather than causal conclusions. In the context of online training, the decline or suboptimal achievement among some participants may have been related to limited concentration because participants attended the training while continuing to carry out other work duties, unstable internet connections, and device-related problems, such as laptops, mobile phones, or tablets experiencing technical disruptions, lagging, or freezing. These factors may have affected participants' engagement during the learning process as well as the consistency of their performance when completing the posttest.

The practical implication of these findings is the need to strengthen the training design in several aspects. First, pretest results can be used to map participants' initial competence so that learning strategies during training can be adjusted to participants' actual needs. Second, the proportion of practice needs to be further strengthened so that subject-matter mastery does not remain at the conceptual level, but develops into a more applicable understanding. Third, advanced training or post-training mentoring should be considered so that participants in the low category, including those who showed negative gain, receive additional support to strengthen their archival subject-matter mastery through more intensive practice and more targeted guidance. Thus, the training would not only be statistically effective, but also more substantively equitable.

Nevertheless, this study has several limitations. The pre-experimental design without a control group means that the findings need to be interpreted carefully as an indication of effectiveness, rather than as fully robust causal evidence. In addition, the reliability of the instrument was at an adequate level; therefore, future studies are recommended to use instruments with stronger testing procedures and a comparative design.

Academically, this study contributes to strengthening the literature on the effectiveness of archival training for vocational teachers, particularly in the MPLB Programme. The study shows that teacher competence development through substantive training needs to be positioned as an integral part of strengthening the implementation of the Merdeka Curriculum. Practically, these findings can serve as a basis for training providers, education offices, and vocational education stakeholders to design teacher professional development

DOI: https://doi.org/10.17509/jpm.v11i2.99239
p- ISSN 2686-5491 e- ISSN 2656-4734

programmes that are more precise, needs-based, and relevant to developments in modern office administration.

Overall, the results of the study show that archival training made a significant contribution to strengthening archival subject-matter mastery among vocational school teachers in the MPLB Programme in West Java Province. This contribution was reflected in the significant difference between pretest and posttest scores and the normalized gain obtained in the medium category. In the context of office management education, this finding confirms that archival training not only supports improvement in teachers' subject-matter mastery, but also strengthens their substantive readiness to deliver MPLB learning that is more contextual, applicable, and aligned with the demands of modern office administration.

5. CONCLUSION

This study shows that archival training made a significant contribution to improving archival subject-matter mastery among vocational school teachers in the MPLB Programme in West Java Province. This was evident from the increase in pretest and posttest scores and the overall normalized gain value of 0.37, which fell within the medium category. Thus, archival training can be positioned as one strategy for teachers' professional development to strengthen substantive readiness in supporting MPLB learning that is more contextual, applicable, and relevant to modern office administration practices.

Nevertheless, the gain distribution shows that improvement in training outcomes was not yet evenly distributed. There were still participants in the low category, including participants with negative gain, indicating that the training design needs to pay greater attention to differences in initial competence, the intensity of practice, and post-training support. Academically, this study strengthens quantitative evidence on the contribution of archival training to vocational teachers' subject-matter mastery. Practically, the findings can serve as a basis for training providers and vocational education stakeholders to design archival training that is more adaptive, needs-based, and oriented towards the equitable achievement of participants' learning outcomes.

6. AUTHORS' NOTE

The authors declare that there is no conflict of interest in the publication of this article. In addition, the authors affirm that this article is free from plagiarism.

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